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DATE:	January 28, 2004	**Action Item #: 1825**
RE:	AMS, EXP, & ICC Payload Bay Option for UF4.1	
CC:	Shakeel Razvi/OM, RS Library	
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The MAGIK Robotic Analysis Team has completed an action to quickly assess the feasibility of non-baselined manifest positions for the Express Pallet (EXP), Integrated Cargo Carrier (ICC), and Alpha Magnetic Spectrometer (AMS) on flight UF4.1.

Mauro Najar/USA supplied the manifest positions for the three payload bay elements to the MAGIK Team. These positions are shown in Figure 1.

The MAGIK Team has determined that the suggested manifest positions have several issues which will have to be solved before flight.

- EXP grapple is not kinematically feasible with the ICC in place (Figure 2).
- AMS grapple while the EXP is in the payload bay is not kinematically feasible without contact between the Shuttle Remote Manipulator System (SRMS) and the EXP payloads (Figure 3).
- The Payload Retention Latch Assemblies (PRLAs) for the aft AMS trunnions interfere with the aft Manipulator Positioning Mechanism (MPM) (Figures 4 and 5). However, the 3D graphical model of the PRLA is possibly outdated and not precisely accurate. New and more accurate models should be used to determine if there is actual interference.

Assumptions:

- Payload manifest positions were obtained from Mauro Najar/USA.
- ICC payloads were assumed.
- 3D graphical models used in this analysis are a result of the MAGIK Team's "best efforts" to obtain/create accurate models reflecting actual volumetric dimensions of the various ISS elements. "Best efforts" include obtaining models directly from the ISS CAD Modeling Team, the hardware designers, or a 3rd party (a source other than the hardware designers), or creating models from hardware designer or customer provided drawings/information.
- Pedigree information for pertinent models may be obtained from the MAGIK Team upon request.

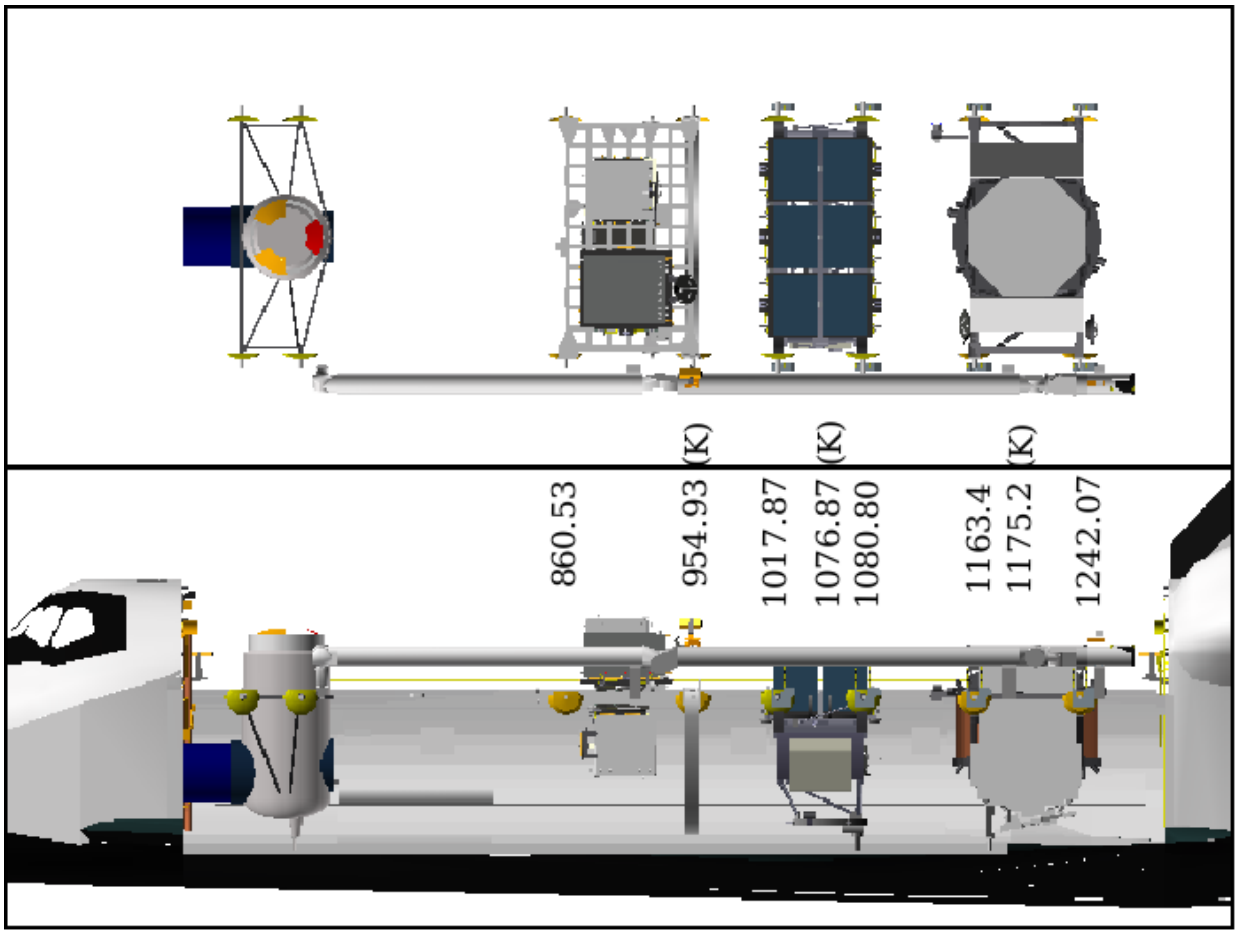

Figure 1: Manifest Positions for ICC, EXP, and AMS

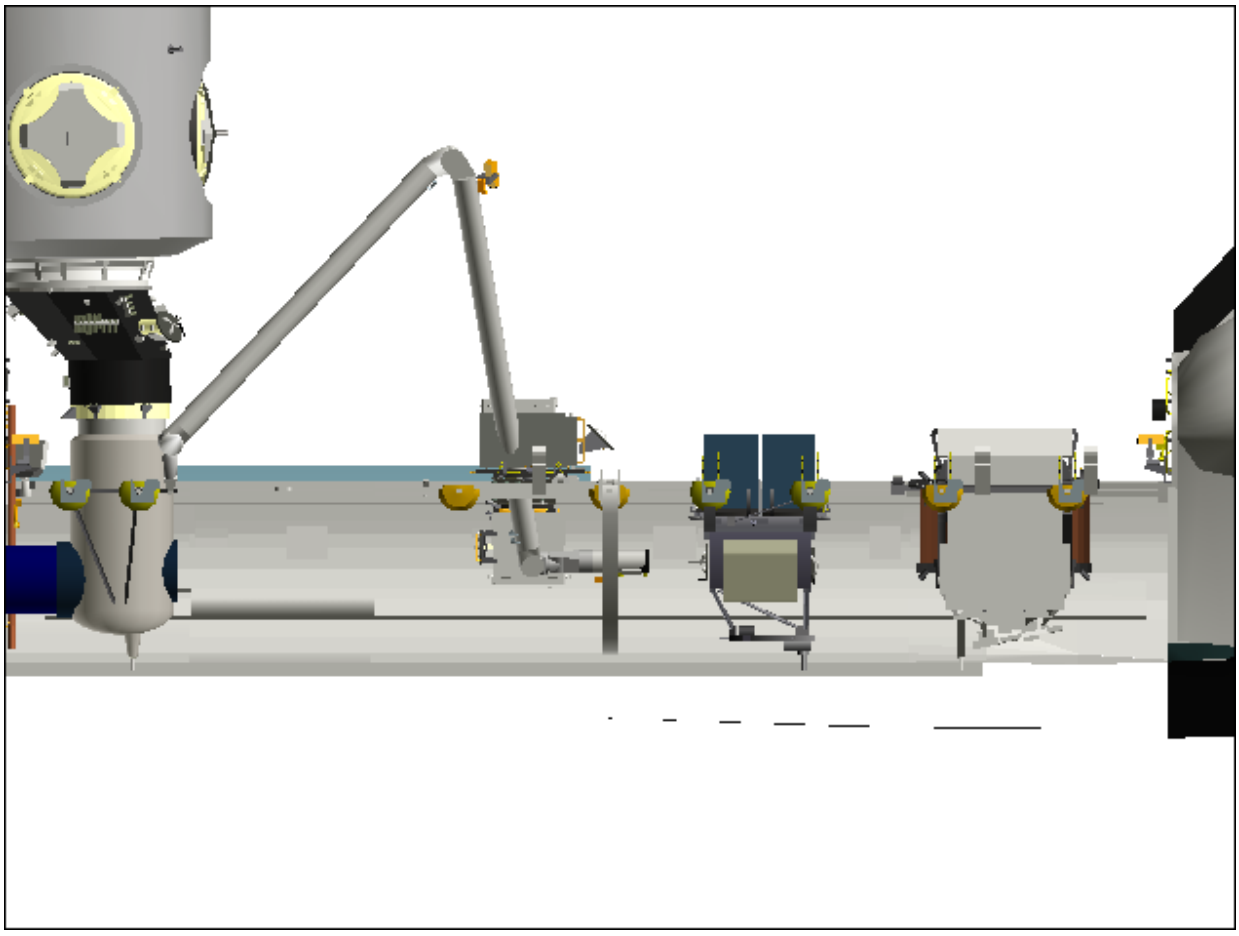

Figure 2: Approach to Grapple EXP – Interference to the ICC Orbiter Port View

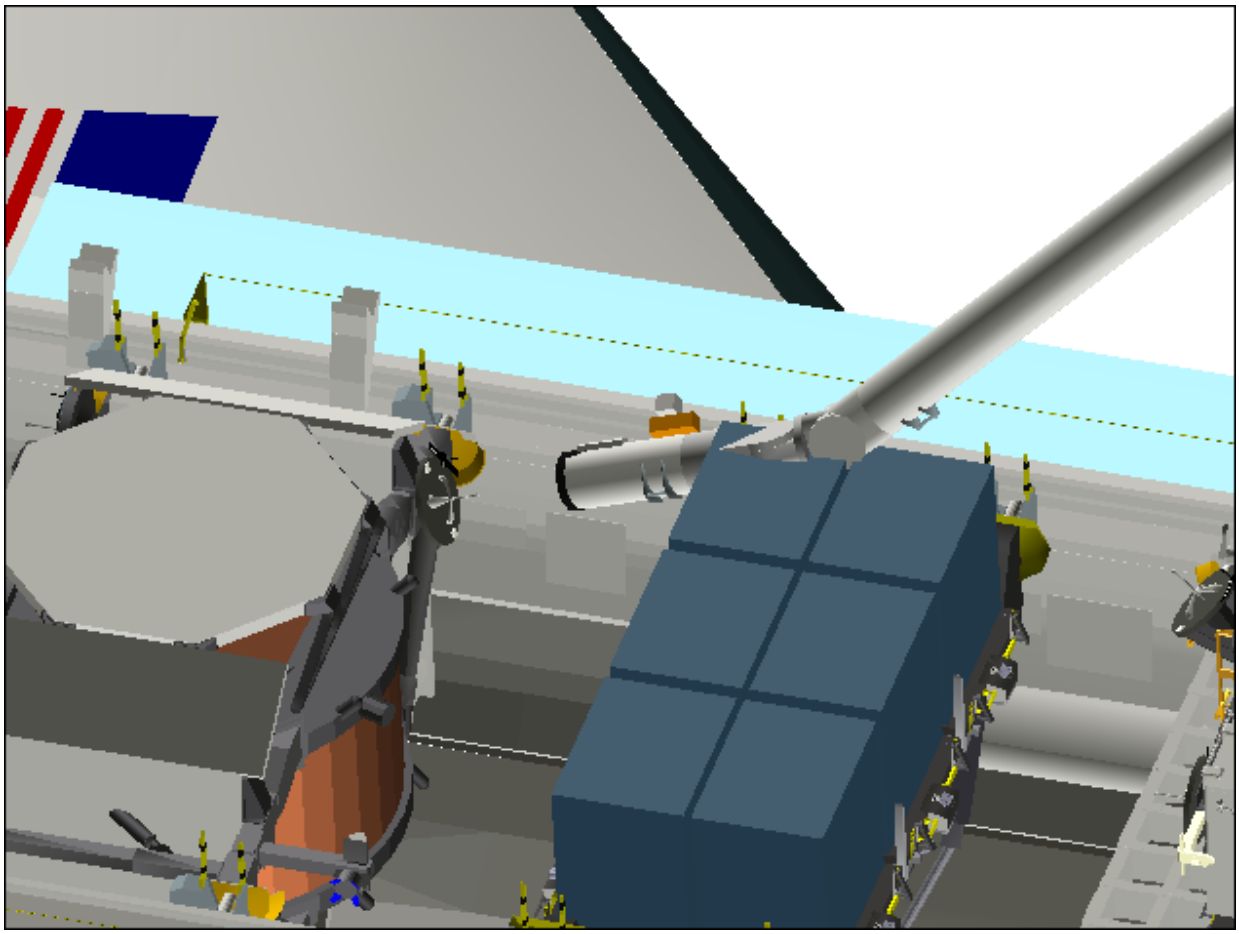

Figure 3: Approach to Grapple AMS – Interference to the EXP Payloads
Isometric View Looking Orbiter Nadir-Port

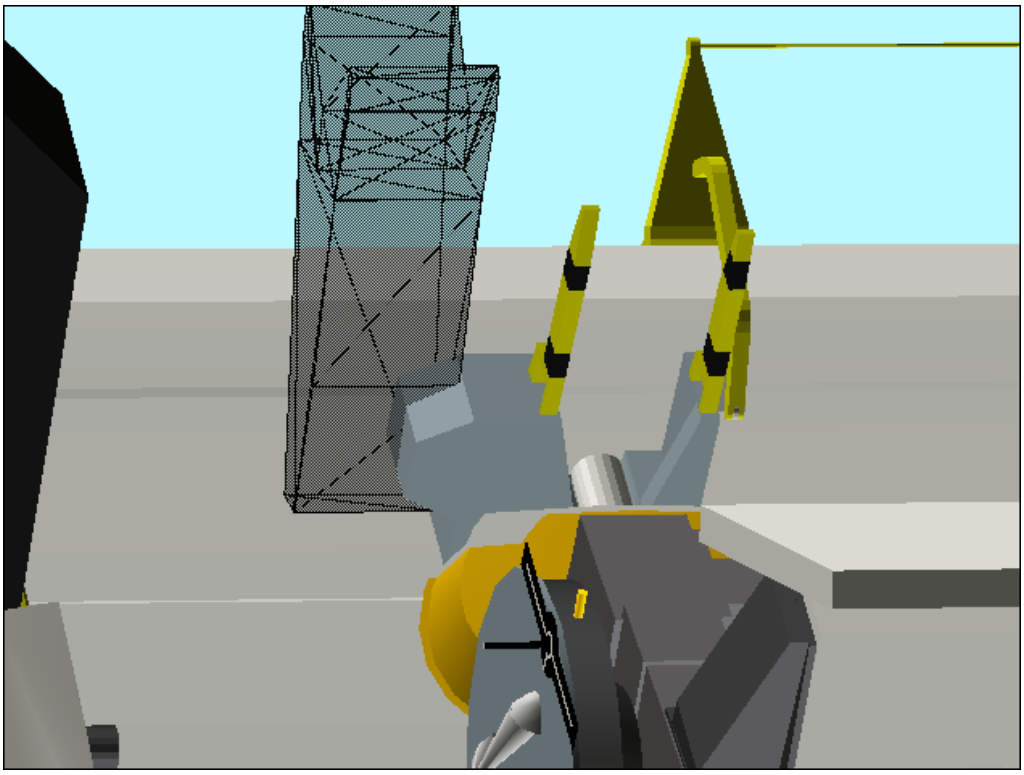

Figure 4: AMS Aft PRLA to MPM Interference

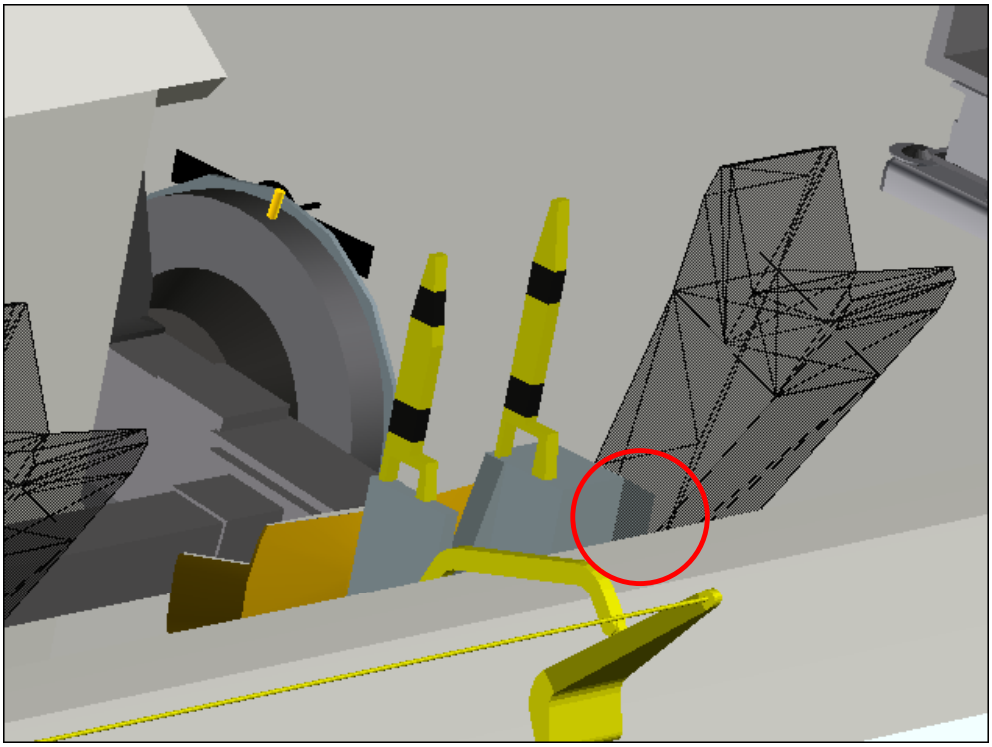

Figure 5: AMS Aft PRLA to MPM Interference